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The part-time enrolments: where have all the students gone?

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Introduction

Part-time enrolment at Canadian universities has dropped dramatically over the last few years -- a trend that has educators concerned and puzzled.

From 1976 to 1992, the number of students registered in part-time studies at Canadian universities rose by 66 percent, to reach a peak of 316,165[1]. By 1997, however, part-time enrolment had fallen to 1980 levels. Preliminary data for September 1998 indicate a further two percent decline.

Aside from the negative effect of declining enrolment on university budgets, there are significant societal concerns. Declining participation of part-time students is inconsistent with the perceived need for more lifelong learning among adults, particularly in the face of new technological and workplace changes. In fact, the 1996 Census reveals declines in part-time study for certification for all programs of six weeks or longer (see Figure 1). Either the need for lifelong learning is illusory or adults are choosing to fulfil it through short-term training at public or private educational institutions.

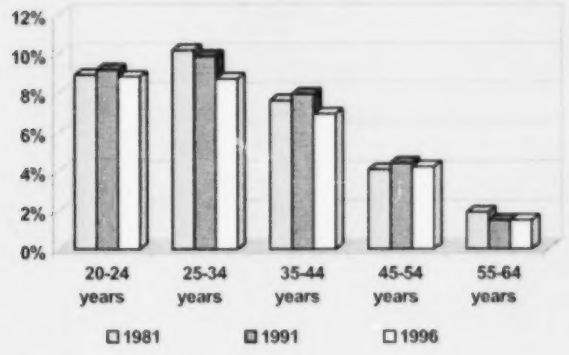
Highlights

- After peaking at just over 316,000 students in 1992, part-time enrolment in Canadian universities has declined in each of the next six years, falling to just 245,000 students in 1998.
- Part-time participation rates are declining not only in universities but for all programs of six weeks or longer. Either the need for lifelong learning is illusory or adults are choosing to fulfil it through very short-term training courses.
- The large increases in part-time enrolment from 1976 to 1992 had more to do with demographic changes than they did with educational choices. The timing of the downturn in part-time participation, the different patterns of enrolment behaviour between men and women, and the magnitude of the changes, suggest that the primary explanations must lie on the demand side of the equation.
- Most part-time students would not consider lost earnings opportunities as part of the cost of their studies. Therefore tuition represents the single largest component of their educational costs. Thus, the same proportional increase in tuition levels will increase the relative costs to part-time students by a greater **proportion** than for full-time students.
- Mature students enrol part-time either because they enjoy the pure consumption benefits of a university experience or because the costs and benefits from the investment have changed from what they had earlier expected. This latter phenomenon the could be called "revised expectations" paradigm of adult education
- Increases in part-time enrolments caused by unexpected economic shifts that increase the premium to university education will only be temporary. Once the new, higher premium is known, it will be factored into the human capital decisions of young individuals and unless there are further, unexpected changes in the premium, through time all age cohorts will have adjusted to the correct level of human capital. Thus, part-time enrolments will be sustained only if there is continued **growth** in unexpected demand for university-educated labour.

There is little information or analysis of part-time student behaviour in Canada. Theoretical approaches on the demand for education in economics literature are focussed exclusively on the demand for full-time education. While some individual universities have surveyed their part-time students, these surveys are generally ill-suited to the central question of enrolment declines and fail to offer general lessons of a national scope. Anecdotal evidence has been offered, pointing to financial cut-backs falling disproportionately on part-time course offerings, redefinitions of "part-time" among some universities, or changing workplace practices that make it more difficult for adults to pursue part-time studies. Quantitative estimates of the accumulated impact of such "micro" level explanations have not been undertaken, although research is currently taking place.

The purpose of this report is to examine national part-time university enrolment behaviour, using a human capital investment perspective to provide a general framework for analysing the role of such factors as recent tuition fee increases. Section II reviews recent patterns of part-time enrolments in order to identify issues requiring explanation. Section III outlines the standard human capital model of the demand for education and draws out its implications for part-time studies. This section also describes an empirical model and estimates the impact of changes for part-time enrolment. Conclusions are offered in Section IV.

Figure 1: Part-time participation rates are declining



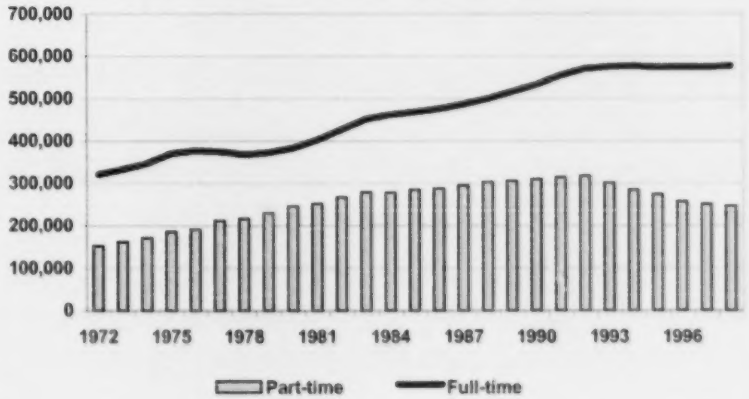
Source: Statistics Canada Census Data

What has happened to part-time enrolments?

Figure 2 illustrates the behaviour of part-time and full-time enrolments from 1972 to 1998. Both series display fairly steady growth up to 1992 but then diverge sharply. This divergence suggests that whatever factors have contributed to the decline in part-time enrolments have not influenced full-time behaviour in the same way. While there are some differences across provinces in enrolment patterns, all provinces display growing numbers of part-time students from 1976 to the end of the 1980s and, with the exception of British Columbia, a tendency to decline in the last five or six years.

The vast majority of enrolment growth from 1976 to 1992 was accounted for by women, particularly 35 to 44 year olds. Table 1 reports the

Figure 2: Historical trends in enrolment by registration status



proportion of growth in part-time enrolments attributable to the various age and gender categories during the period. For example, the total number of part-time students increased from 191,000 in the fall of 1976 to 316,000 in 1992, and women accounted for 75 percent of this increase. The same groups with the largest responsibility for growth also tended to contribute most to the subsequent decline. Explanations of the behaviour of part-time enrolment must therefore pay particular attention to women between the ages of 25 and 44.

In addition, there have been changes in the full-time/part-time split of young learners, ages 18 to 24. However, since the following analysis is concerned with the educational choices of adults (students aged 25 and older) and not the manner in which younger students choose to complete degrees, all subsequent analysis is confined to part-time students in the 25 to 59 age category.

Over time, fluctuating enrolments among the various age and gender groups compound two separate influences: changes in demographic structure and changes in participation rates. For both the period of enrolment increases and the period of declines, Table 2 breaks down the total enrolment change for each demographic group into the component caused by population change and the component resulting from participation rate changes. For any particular demographic group, the pure impact of population change is calculated as the change that would have occurred had the participation rate remained at its beginning of period value and only population changed. The impact of

Table 1: Role of Demographic groups in part-time enrolment change

	Male	Female	Male	Female
	Contribution to growth 1976 to 1992		Contribution to decline 1992 to 1997	
18 to 24	9.7%	15.5%	5.4%	5.6%
25 to 34	1.3%	18.0%	18.7%	25.1%
35 to 44	9.6%	26.9%	9.5%	25.3%
45 to 54	3.7%	12.6%	1.1%	7.7%
55 to 59	0.2%	0.6%	-0.1%	0.3%
Total	25.2%	74.8%	35.1%	64.9%

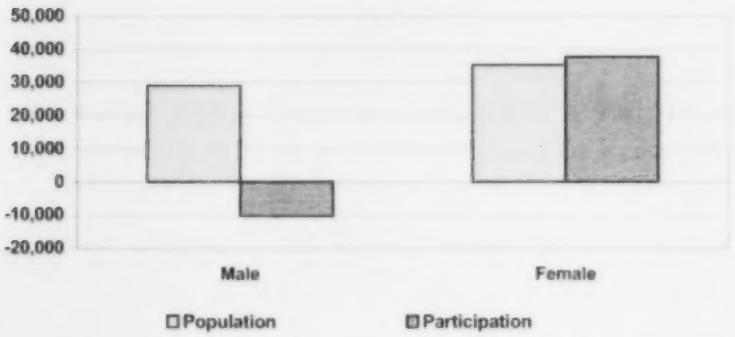
Table 2: Decomposition of part-time enrolment change

	1976 to 1992			1992 to 1997		
	Impact of population	Impact of participation	Total	Impact of population	Impact of participation	Total
Males						
25 to 34	16,931	-15,243	1,689	-3,487	-8,962	-12,449
35 to 44	10,476	1,530	12,005	3,431	-9,741	-6,310
45 to 54	1,275	3,353	4,627	2,194	-2,916	-722
55 to 59	165	23	188	102	-66	35
Total	28,846	-10,337	18,509	2,239	-21,685	-19,445
Females						
25 to 34	16,627	5,936	22,562	-4,432	-12,247	-16,679
35 to 44	16,042	17,627	33,670	6,981	-23,817	-16,836
45 to 54	2,232	13,571	15,803	6,090	-11,186	-5,096
55 to 59	257	482	739	274	-505	-231
Total	35,158	37,616	72,774	8,913	-47,755	-38,842

participation changes is the change that would have occurred had population been constant at its end of period value and only participation rates changed[2].

A number of interesting insights emerge from Table 2. First, the large increases in part-time enrolment from 1976 to 1992 had more to do with demographic changes than they did with educational choices. Of the 91,283 additional enrolments, more than 70 percent are attributable to the "baby boom" growth in the 25 to 59 year old cohorts. Indeed, for men, population increases served to mask an underlying reduction in the propensity to engage in part-time studies. The same is not true for women who demonstrated an increasing participation rate over the period for all age groups.

Figure 3: Female and male participation vs. population 1976 - 1992



The period of enrolment decline from 1992 to 1997 is characterized by significant reductions in participation for all age groups. The participation rate decline for men continued but, during this period, population growth was too weak to offset the decline. Female participation, which had grown up to 1992, now began to drop. For both groups, then, the primary culprit in enrolment declines from 1992 to 1997 has been the participation rate. Indeed, demographic changes should have continued to contribute to enrolment growth, although not by as much as in the earlier period.

The key finding from Table 2 is that recent enrolment losses among adults are occurring because adults are choosing not to attend university courses. This continues a trend for men that had been taking place well before 1992 but had been obscured by

Figure 4: Demographics should have led to growth between 1992 and 1997

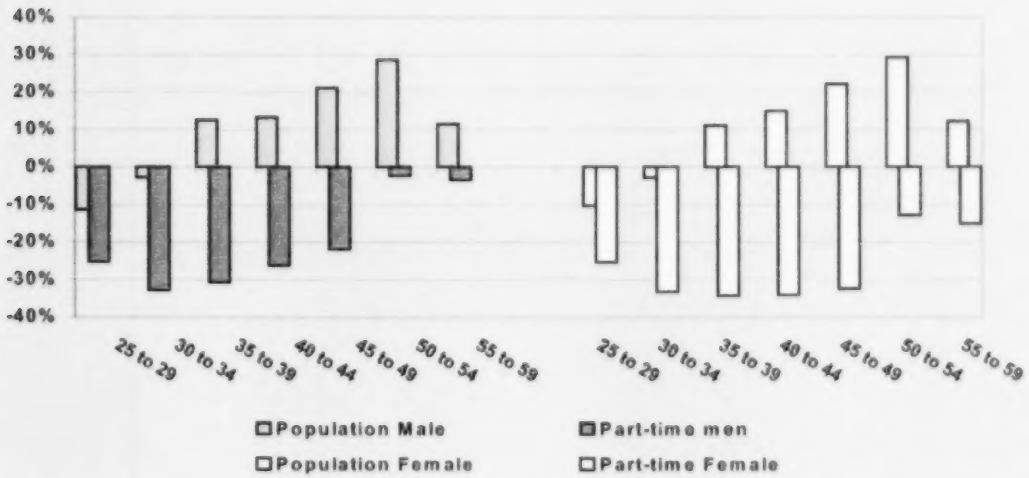
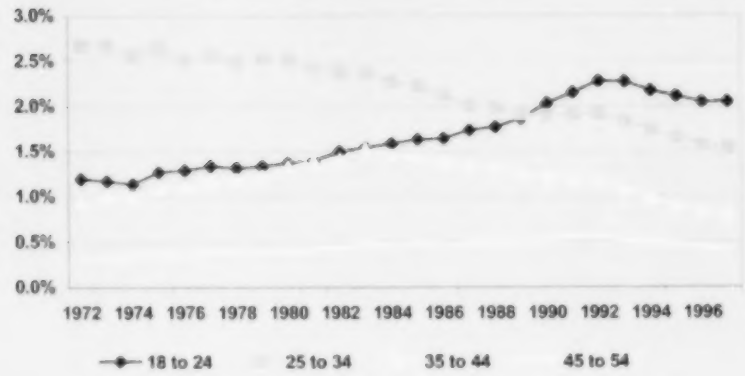


Figure 5: Part-time participation rates of men 25 to 44 have been declining since the mid-1980's



demographic changes. Indeed, if one regards the slight increases at the beginning of the 1980s and 1990s as artifacts of the recessions in those years, it could be argued that male participation in part-time studies has been on a steady decline since 1980.

On the other hand, reduced participation by women is a new phenomenon, representing a reversal of their behaviour from 1976 to about 1990. Not only are there far more women engaged in part-time studies than men, women's participation rates increased significantly for much of the period (although not as much as actual enrolments). However, even for women, the participation decline really begins in 1988, three years earlier than an inspection of Figure 1 would suggest.

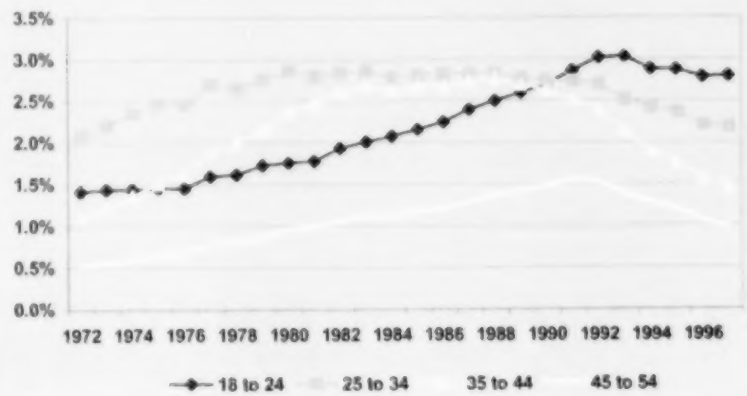
The timing of the downturn in part-time participation is a crucial issue. Discussion among university officials tends to focus on recent budgetary cut-backs that have disproportionately affected the number of part-time courses being offered or the equally recent increases in tuition fees. However, if the underlying behaviour of part-time students began changing as early as 1983, then clearly other factors must be at work. Moreover, the different patterns of enrolment behaviour between men and women, and the magnitude of the changes, suggest that the primary explanations must lie on the demand side of the equation. Course restrictions, for example, simply cannot be expected to produce the size of enrolment shifts seen in Figure 2 nor could they be expected to effect men and women so differently.

Given available data, a prerequisite for progress in understanding the decline in part-time enrolments is a conceptual framework for analysing the demand for education and, ultimately, an empirical model capable of providing quantitative estimates of the impacts of various factors influencing that demand.

The demand for part-time education

This report uses human capital theory to provide an organizing framework for thinking about part-time enrolment decisions. Certainly, there are part-time students motivated entirely by pure curiosity about the subject matter of their courses and by the joy of learning. For them, a university education is a consumption good, purchased for its own sake like books or restaurant meals. For other

Figure 6: Part-time participation rates of women did not begin to decline until the late 1980s or early 1990s



students, university courses are more a means to a financial end -- an investment in the future.

The human capital perspective does not deny the possibility of significant consumption benefits to education, but focuses on the financial costs and benefits. The costs of participating in university studies include all out-of-pocket expenditures on tuition, books, and living expenses that would not otherwise have been incurred, as well as the value of the lost opportunity to earn income while in school. These so-called "foregone earnings" costs are not explicitly paid by students but are nevertheless considered to be the single largest expense for full-time students[3]. The financial benefits of a university education take the form of increased earnings. In original versions of the model, this increase is a consequence of the enhanced labour productivity resulting from education from whence comes the term "human capital". Since costs are incurred before benefits, an investment framework is used and individuals are regarded as weighing the educational activity in the same manner as they would a financial investment. The investment is undertaken if the future benefits are sufficiently higher than present costs or, in the jargon of the literature, if the rate of return to an investment in education is sufficiently high.

The human capital model is intuitively plausible, simple, and has clear predictions about the demand for education. Any changes affecting the rate of return to education will alter demand. Thus, for example, an increase in tuition fees lowers the rate of return leading to a reduced probability that a given individual will choose to make the investment or, equivalently, to a reduced proportion of any group observed to be attending university courses. Note that this would also be consistent with a consumption benefit view of university courses -- increasing the price of almost any good reduces the demand for that good. The human capital model provides an avenue for other influences on participation. Increases in the earnings of those with a university background compared to individuals with lower levels of educational attainment may be used by potential students to revise their expected payoffs upwards, thereby inducing greater participation. An increase in the unemployment rate suggests reduced job opportunities, thereby lowering the foregone earnings component of costs and increasing the rate of return to the investment.

Consider, for example, the expected impact of rising tuition levels. In the case of full-time students, the largest component of cost is generally regarded to be the foregone income during studies, an amount that might be some multiple of tuition costs. Part-time students, on the other hand, might reasonably be expected to suffer very little in the way of lost earnings opportunities during the course of their studies. Tuition would then represent the single largest component of educational costs. The same proportional increase in tuition levels will therefore increase the costs to part-time students by a greater **proportion** than the costs of full-time students. This, in turn, causes the tuition fee increase to have a greater impact on the rate of return to part-time students than it would on their full-time counterparts and, consequently, a larger impact on their enrolments. This is consistent with the divergence of full-time and part-time enrolments noted in Figure 1 occurring at a time of tuition fee increases.

Another important insight is offered when the human capital

> "Foregone earnings" are not explicitly paid out by students but are nevertheless considered in the literature to be the single largest expense for full-time students. Part-time students are generally working so they do not forego employment income while enrolled. To them tuition is a much greater portion of the overall costs of enrolling than for the full-time student. Hence the part-time student is likely more sensitive or responsive to changes in tuition costs.

perspective is used to think about why adults engage in part-time studies at all. The economic benefits to education take the form of a higher stream of earnings throughout the working life and evidence is unequivocal that such earnings gains are large for university degree holders. Since there is only a limited time during which those benefits can be collected, the earlier the investment takes place, the larger the rate of return. From a theoretical point of view and in a world where individuals have perfect foresight, we should therefore see people undertaking educational investments as early as possible in their lives.

Mature students must then be in school either because they enjoy the pure consumption benefits of a university experience or because the costs and benefits from the investment have changed from what they had earlier expected. We might call this latter phenomenon the "revised expectations" paradigm of adult education. There are a host of reasons why individuals might revise their cost-benefit calculations in such a way that participating in post-secondary education may become a profitable investment when it was not before. Some individuals who entered the labour force immediately after high school learn more about themselves and their career path, coming belatedly to the conclusion that they would be better off in a career requiring university training. Others who had entered what they thought would be long-term, stable occupations may find their careers unexpectedly terminated as technological change or globalization shrink their sector of employment.

If part-time enrolments are, in fact, driven by such revisions of expectations, and if these revisions are more or less randomly distributed across individuals in the population, then we should expect to see a fairly steady, baseline level of participation in part-time studies. An explanation of the large scale increases in part-time enrolments such as those witnessed from 1976 to 1992 requires a reason why entire cohorts of individuals who had previously decided against university education would change their cost-benefit calculations and decide in favour of such an education. Such a reason could well lie in fundamental labour market changes that increased the rate of return to university education for groups of individuals who could not have foreseen those increases at an earlier age. The data in Table 1 are consistent with the following interpretation.

Table 3: Percentage of individuals with completed university degrees: Canada

	Ages 25 - 34		Ages 35-44	
	Men	Women	Men	Women
1976	16.3%	9.3%	11.3%	4.6%
1996	18.9%	20.6%	17.9%	16.5%

The 1980s and early 1990s saw dramatic shifts in the relative employment patterns of individuals with different levels of education. For example, from 1980 to 1993, employment levels of individuals with only elementary education fell at an average annual rate of -6.3 percent while employment of those with a completed university education rose at an average annual rate of 4.5 percent[4]. It is quite likely that these relative shifts were not anticipated by those of a typical full-time undergraduate aged student at the beginning of the period and not factored into their human capital decisions. Obviously, for older individuals with few potential working years left, no amount of improvement in opportunities for those with higher educational credentials would be enough to warrant further investments in education. But for prime-age individuals, the shifts may well have produced sufficient financial incentives to make upgrading profitable. This would be especially true for women, who witnessed not only a growth in relative demand for educated labour but also lowered labour market barriers to skilled female labour. Moreover, women entered the period with significantly lower educational attainment compared to men and, therefore, an appreciably greater need to upgrade. Table 3 reports the percentage of men and women in the prime age groups with completed university degrees in 1976 and 1996.

There is a very important corollary of the "revised expectations" view of part-time enrolments. Increases in part-time enrolments caused by

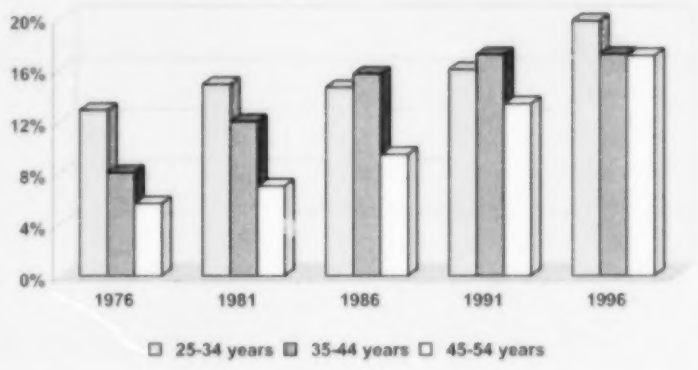
unexpected economic shifts that increase the premium to university education will only be temporary. Once the new, higher premium is known, it will be factored into the human capital decisions of young individuals and unless there are further, unexpected changes in the premium, through time all age cohorts will have adjusted to the correct level of human capital. Thus, part-time enrolments will be sustained only if there is continued **growth** in unexpected demand for university-educated labour. The most recent Census data illustrates there is much less difference between the educational attainment of younger and older cohorts in the 1990s than in the 1970s or early 1980s. This lends some support to the hypothesis that more middle aged people responded to human capital signals in their youth and do not need to upgrade their qualifications through part-time study.

The human capital model suggests a number of factors which might be important in explaining the recent behaviour of part-time enrolments through their influence on the rate of return to university studies. Increases in tuition levels reduce that return while increases in the employment rate or in the earnings of university graduates relative to non-graduates increase the return to these investments. In addition, part-time enrolments may have been driven by a raising of the educational bar in the labour market above what adults had anticipated at an earlier time in their lives.

To determine whether these factors can explain actual part-time enrolment behaviour in Canada and to assess the quantitative importance of each, the authors used regression analysis to estimate a demand for part-time studies model[5]. Provincial data for the years 1976 to 1996, inclusive, were used to observe variations in part-time participation rates (defined as the number of part-time students within any age group measured as a proportion of the provincial population in that age interval), in tuition levels, in unemployment rates and in earnings gains attributable to university education. Although it is recognized that actual enrolments clearly depend upon both the number of individuals who wish to attend university (which is the true measure of demand) and the number that are allowed to attend, in practice it is impossible to separate demand and supply factors and actual enrolments must, perforce, be used as reflecting demand. With this caveat in mind, empirical counterparts to the theoretical determinants of demand are fairly straightforward to measure, with the exception of the variable to capture unanticipated changes in the value of university education.

Conceptually, a measure is required that captures changes in the labour market value of a university education that were not anticipated by current adults earlier in their lives when educational investments would have generated a higher return. To some extent, increased relative demand for more educated labour might be expected to generate price signals in the form of changing relative wages among groups with different educational attainments. In fact, the increased opportunities for educated labour in the 1980s and 1990s appears to have had little effect on wage differentials, operating more on employment changes[6]. Therefore, this report uses changes in the full-time participation rate as a proxy to capture unanticipated changes in the demand for university trained labour.

Figure 7: By the mid-1980's education attainment of young and old were almost equal



In essence, the assumption is that young people emerging from high schools base their human capital decisions on the latest available information about potential labour rewards to education. An increase from one year to the next in their participation rate may therefore indicate that the prospects for university graduates relative to others have improved over what had been expected by the previous full-time cohort.

To allow different demographic groups to react differently to changes in the explanatory variables, separate regression equations were estimated for each of the following groups: Men ages 25-34, 35-44, 45-54, 55-59 and women ages 25-34, 35-44, 45-54 and 55-59. Controls were used to account for provincial differences in part-time enrolment behaviour not attributable to differences in the explanatory variables identified above.

The overall fit of the regression equations was generally good for all demographic groups. The following discussion focuses on those two explanatory variables with the potential to explain the increase and subsequent decrease of part-time enrolments over the last twenty years -- tuition level changes and revised expectations.

For all demographic groups except males in the 45-54 age category, tuition exerts a statistically significant, negative influence on part-time enrolments as would be expected whether part-time university studies are an investment or a consumption activity. To provide some quantitative sense of the relationship, estimated coefficients were used with mean values of participation and tuition levels to calculate elasticities, which are reported in the following table. Elasticities are the ratios of percentage changes in part-time participation in the specified population group to percentage changes in tuition. Thus, the elasticity value of -0.36 reported in the table for males ages 25-34 indicates that a one percent increase in tuition would result in a 0.36 percent drop in the participation rate of this group.

Table 4: Elasticity of demand for part-time education with respect to tuition levels

	Males	Females
25 - 34	-0.36	-0.28
35 - 44	-0.52	-0.47
45 - 54	-0.10*	-0.14
55 - 59	-0.30	-0.24

* Not statistically significant

Some care should be taken in interpreting this result. The average participation rate for this group through the period was 1.717 percent. Therefore, if tuition levels rise by 10 percent, the participation rate would fall by six hundredths of one percent to 1.655 percent. To put this into perspective, this decline in the participation rate if applied to all Canadian males in the 25-34 age group in 1996 would have resulted in an absolute enrolment decline of about 1,500 individuals.

The regression model allows us to address the question of the contribution of tuition increases to the enrolment decline from 1992 to 1996. For each demographic group, the estimated model is used to simulate the behaviour of participation rates under the hypothetical scenario of constant tuition levels during that period (all other factors in the model assume their actual values). Our calculations show that, had tuition fees remained constant at 1992 levels in all provinces, the total part-time enrolment decline predicted by the model would have been less than half of the actual decline. Tuition fees, in other words, are estimated to account for approximately 60 percent of the observed drop in part-time enrolments. This estimate is subject to the usual caveats of statistical inference and arises out of an empirical model with less than ideal data. Nevertheless, the relatively large estimate of the tuition fee impact should not be completely unexpected in the case of part-time students. A significant proportion of them may be driven by the pure consumption benefits of university study and this segment may be particularly sensitive to the tuition increases of the last several years. For the human capital investors, we have already argued that tuition increases will impact rates of return among part-time students more than would be the case for full-time students.

The second major dynamic hypothesized to have occurred over the

last decade has been the "catching up" of academic qualifications to changing labour market needs, particularly for prime age women. According to our estimates, an increase in the full-time university participation rate is associated with a higher level of part-time enrolments for men in the 35 to 44 age group and for women in the 35 to 54 age groups. Clearly, the model is testing a joint hypothesis -- that adult part-time learners are at least partly driven by upward revisions in their estimates of the labour market value of a university education and that our proxy measure captures previously unforeseen increases in that value. At best, therefore, we can claim only that the statistical evidence is consistent with our hypothesis but it is nevertheless interesting that our proxy for revised expectations is statistically significant and of the correct sign precisely for those three demographic groups with the largest role in the observed increases and decreases in part-time enrolments.

CONCLUSION

The enormous expansion of part-time university enrolments in the 1980s seemed to suggest an important role for universities in serving the lifelong learning needs of adults. It appeared that ever-increasing skill demands in the labour market were being translated into higher enrolments of adults and that an increasingly well-educated population was becoming "university friendly". A closer examination of the anatomy of that enrolment growth, however, reveals a different picture. Almost three-quarters of the growth in part-time enrolments between 1976 and 1992 can be attributed to population growth in those demographic segments that traditionally have been the source of adult part-time learners, as opposed to an increased propensity by individuals to engage in part-time studies. Indeed, males began to reduce participation rates as early as 1983. Moreover, the notion that a completed university education acts as a positive factor in future part-time studies is belied by the fact that males had both higher educational attainments and lower participation rates than females throughout this period.

Participation by women in part-time studies have played the primary role in both the growth of enrolments and the subsequent decline. This report suggests two reasons why this has happened. First, women began the period with significantly lower academic qualifications than men and, therefore, a much greater need to catch up to the needs of a labour market increasingly open to well-educated women. Whether through upgrading of skills through part-time studies or the progression of more highly educated women through the age cohorts over time, their educational qualifications are now roughly equivalent to those of men and may finally have caught up to the needs of the labour market. To the extent that the "revised expectations" paradigm of part-time studies is correct, part-time enrolments of women are driven not by the level of skill needs in the labour market, but rather by increases in those needs. Therefore, these enrolments will not grow again until the labour market demands higher levels of education than are currently being anticipated by young, full-time students.

Much more research (particularly on the supply of part-time education) and improved data will be necessary for a full understanding of the recent behaviour of part-time university enrolments. Nevertheless, changes in the number of Canadians attending universities on a part-time basis are of such an order of magnitude that very broad demand side factors must be important components of any explanation. The human capital model of the demand for education is well-suited to formalizing analysis of those factors, producing logically consistent predictions that appear to go a considerable distance in explaining the recent precipitous drop in part-time enrolments.

Endnotes

1. Enrolment data has been extracted from Statistics Canada's SIS and supplied by AUCC. Note that part-time enrolments are essentially headcounts and the data used here include both undergraduate and graduate students.

2. Clotfelter, C. (1991), "Demand for Undergraduate Education", in C. Clotfelter, R. Ehrenberg, M. Getz and J. Siegfried (eds.), Economic Challenges in Higher Education, The University of Chicago Press, pages 19 to 139.

3. See, for example, D. Stager (1989), Focus on Fees: Alternative Policies for University Tuition Fees, Council of Ontario Universities, Toronto.

4. See W.C. Riddell (1995), "Human Capital Formation in Canada", in K. Banting and C. Beach, (eds.), Labour Market Polarization and Social Policy Reform, School of Policy Studies, Queen's University, Kingston, p. 131.

5. A technical report providing details of the estimation is available from the authors.

6. See, for example, Riddell (1995), op. cit.